

# Dementia, awareness and depression

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## DEMENTIA, AWARENESS AND DEPRESSION

FRANS R.J. VERHEY,\* NICO ROZENDAAL,† RUDOLF W.H.M. PONDS‡ AND JELLEMER JOLLES§

\*Neuropsychiatrist, †Research Assistant, ‡Neuropsychologist, §Neuropsychologist/Neurochemist, Dept of Psychiatry, University Hospital of Maastricht, and Dept of Neuropsychology and Psychobiology, University of Limburg, The Netherlands

### SUMMARY

We examined 170 outpatients, 103 with Alzheimer's disease, 43 with vascular dementia and 24 with various other causes, in order to investigate whether or not depressive symptoms were more likely to occur in dementia patients who had some degree of awareness of their cognitive deterioration. Awareness was rated on a four-point scale that assessed discrepancies between the patient's and the caregiver's history. The level of awareness was significantly related to the severity of dementia but not to depression or to the score on Hamilton's depression scale. However, the score from the item 'psychic anxiety' showed a weak but significant correlation with the level of awareness of one's deficits. It is concluded that intact awareness of deterioration was not clearly related to the development of depression or depressive symptoms in dementia.

KEY WORDS—Awareness, anosognosia, dementia, insight, depression, Alzheimer's disease, vascular dementia.

It is well established that symptoms of depression occur more frequently in patients with Alzheimer's disease (AD) and other dementing disorders than in the normal elderly population (McAllister and Price, 1982; Lazarus *et al.*, 1987; Wragg and Jeste, 1989; Fischer *et al.*, 1990). Insight into the relationship between depression and dementia contributes to the understanding of the pathogenesis of the disorder and has important implications for the choice of therapeutic strategies. An overlap in the neuro-pathological and neurochemical substrate of depression and AD, cerebrovascular disease and Parkinson's disease has been suggested as a biological explanation for the higher prevalence rate of depression in dementia (eg Zubenko and Moossy, 1988; Starkstein and Robinson, 1989; Zubenko *et al.*, 1990; Cummings, 1992). In contrast, psychological mechanisms underlying the depressive symptoms of demented patients have received much less attention. In this respect, the phenomenon of awareness in dementia may be relevant. The terms unawareness of deficits, lack of insight and

anosognosia (which are used interchangeably in this article, in accordance with the literature) refer to a lack of knowledge or recognition of one's deficits (McGlynn and Schachter, 1989). The few publications that exist on anosognosia in dementia report a general pattern of decreasing insight with increasing severity of the dementing process (Reisberg *et al.*, 1985; McGlynn and Schachter, 1989; Feher *et al.*, 1991). Depressive symptoms have also been reported to occur more frequently in mild dementia than in the more severe stages (Cummings *et al.*, 1987; Fischer *et al.*, 1990). Thus, depressed feelings in demented patients may be seen as an understandable reaction as a patient becomes aware of his or her loss of intellectual capacity and impending deterioration; as insight deteriorates with the progression of dementia, the patient may be less liable to suffer from depression (eg Wells, 1977; Verwoerd, 1982; Hachinski, 1983).

The aim of this study was to ascertain whether or not depressive symptoms are indeed more likely to occur in demented patients who have some degree of awareness of their deficits than in those who lack this insight. We expected the outcome to show that patients who are relatively aware of their deficits are more likely to develop depression or, at least, depressive symptoms and that anosognosia may 'protect' against depressive symptoms in dementia.

Address for correspondence: F.R.J. Verhey, MD, Dept of Psychiatry, University Hospital of Maastricht, PO Box 5800, 6202 AZ Maastricht, The Netherlands, Tel: (0)43-877443. Fax: (0)43-875444.

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## PATIENTS AND METHODS

The subjects were 170 outpatients with dementia who had been consecutively referred to the Maastricht Memory Clinic of the University Hospital of Maastricht (Verhey *et al.*, 1993). Dementia was diagnosed according to the DSM-III-R criteria (American Psychiatric Association, 1987). Patients were diagnosed as possible or probable Alzheimer's disease (AD) based on the NINCDS criteria (McKhann *et al.*, 1984). The diagnosis of vascular dementia (VD) was based on a score of 4 or more on Rosen's modified ischaemic score (IS) (Rosen *et al.*, 1980). It should be noted that, in contrast to Hachinski's original IS, the modified IS does not include the items depression and retained personality. Other aetiologies were diagnosed according to regular criteria. The severity of dementia was assessed by the Global Deterioration Scale (GDS, Reisberg *et al.*, 1982). In the assessment of depression in dementia, a distinction was made between the *syndrome* of depression and *symptoms* of depression. A diagnosis of a depressive syndrome was made according to the DSM-III-R criteria for major depressive episode without applying the organic exclusion (American Psychiatric Association, 1987). The Hamilton Depression Rating Scale of Depression (HRSD, 17-item version, Hamilton, 1960) was administered to obtain a measure of the severity of depression and as a checklist for depressive symptoms. The reliability of this clinician-rated scale has been demonstrated in demented patients (Gottlieb *et al.*, 1988; Ott and Fogel, 1992).

### *Assessment of awareness*

No generally accepted standardized assessment procedure to measure anosognosia or impaired awareness is available to date. For the purpose of this study, impaired awareness was defined, according to Schachter (1990), as the absence of knowledge or recognition of cognitive deficits. In analogy to others, the degree of awareness was assessed by comparing the patient's and the caregiver's history (see McGlynn and Schachter, 1989; Schachter, 1990). Awareness of deficits was rated on a four-point scale, ranging from 4 ('intact') to 1 ('absent'), using the guidelines shown in the Appendix. It was scored by the neuropsychiatrist who carried out the initial interview with the patient and his or her caregiver.

### *Statistical analysis*

Because of the ordinal level of most of the data, non-parametric tests were used for the analysis of the dependent variables of awareness score, GDS score and depression score: rank-order correlation coefficient (Spearman) for correlations between variables, Wilcoxon's test (rank sums) for group differences, and Kruskal-Wallis rank ANOVA with covariates, which approximates a chi-square distribution (Siegel and Castellan, 1988). *t*-tests were used to examine differences in age between the groups. Probabilities greater than 0.05 were considered as non-significant. In the analysis of the HRSD subitems, a level of *p* less than 0.002 was adopted according to a Bonferroni-type adjustment, to protect against spurious significance arising from multiple comparisons.

## RESULTS

The study group consisted of 170 patients, 103 with AD and 43 with VD and 24 with other causes (seven Parkinson's disease, four frontal lobe dementia, two normal pressure hydrocephalus, two alcohol-related dementia, two Huntington's disease and seven miscellaneous causes). Their mean age was  $71.2 \pm 8.6$  years, sex ratio 77 males/94 females. The mean duration of cognitive symptoms was  $38.3 \pm 28.2$  months. Most patients were mildly or moderately demented, as measured by the GDS score (very mildly demented, GDS 3: 17 patients; mildly demented, GDS 4: 77 patients; moderately demented, GDS 5: 55 patients; severely demented, GDS 6: 21 patients). The mean score on the Mini-Mental State Examination (Folstein *et al.*, 1977) was  $18.1 \pm 6.1$  (2–29). The three groups (AD, VD and others) differed with regard to age (70.7, 74.0 and 68.0 years respectively,  $p < .05$ ) and the degree of dementia (average GDS scores 4.4, 4.7 and 4.1 respectively, Wilcoxon chi-square: 11.3,  $df=2$ ,  $p < 0.05$ ).

In order to assess interobserver reliability, awareness was scored independently by two clinicians (a neuropsychiatrist and a neuropsychologist) in a subgroup of 20 consecutive patients. The kappa value was 0.70, indicating substantial interobserver agreement (Landis and Koch, 1977).

Lack of insight was a common phenomenon in this population. Of the 170 patients, only 12 (7%) were able to give their history spontaneously without there being clear discrepancies between their

Table 1. Distribution of awareness scores by severity of cognitive decline (GDS score) among 170 patients with dementia

GDS stage	Awareness score				Total
	4 Intact	3 Mildly disturbed	2 Moderately disturbed	1 Severely disturbed	
3 Very mild dementia	5 (29%)	11 (65%)	1 (6%)	— (0%)	17 (100%)
4 Mild dementia	5 (7%)	45 (58%)	17 (22%)	10 (13%)	77 (100%)
5 Moderate dementia	2 (4%)	16 (29%)	30 (55%)	7 (13%)	55 (100%)
6 Severe dementia	— (0%)	1 (5%)	7 (33%)	13 (62%)	21 (100%)

histories and that given by the caregiver. On the other hand, only 30 patients (18%) showed a complete lack of insight. Patients with AD tended to have somewhat higher awareness scores than patients with VD, but this difference was not statistically significant (Kruskal-Wallis,  $\chi^2=2.62$ ,  $df=2$ ).

The awareness scores correlated significantly with age (Spearman rank-order correlations  $R_s$ :  $-0.33$ , with  $p<0.0001$ ). The distribution of the awareness scores by the severity of dementia (measured by the GDS) is shown in Table 1. There was a significant negative correlation between the GDS score and the awareness score ( $R_s$ :  $-0.51$ , with  $p<0.0001$ ). In contrast to what has been found in other studies (Cummings *et al.*, 1987; Fischer *et al.*, 1990), we did not find a clear correlation between the HRSD score and the GDS scores ( $R_s$ :  $0.11$ , NS), ie patients who were mildly demented had similar depression scores to those with severe dementia.

Only 16 out of 169 patients (9%), nine with AD, four with VD and three with other causes, fulfilled the DSM-III-R criteria for major depression (missing data:  $N=1$ ). The distribution of the awareness scores was not unequal between the patients with depression and those without (Kruskal-Wallis,  $\chi^2=0.05$ ,  $df=1$ , NS). In fact, the majority of the patients with depression (nine out of 16) displayed little or no insight into their cognitive deterioration.

Using rank ANOVA with age and GDS scores as covariate, no significant relationship could be found between the awareness score and the depression score ( $F=0.42$ ,  $df=3$ , NS). Spearman rank-order correlation coefficients between the awareness scores and the scores on the HRSD (total and subitems) are shown in Table 2.

The mean score on the HRSD was  $9.1 \pm 4.9$  (0–25). No significant correlation could be found

Table 2. Correlation coefficients (Spearman rank order) between awareness scores and scores on the Hamilton Rating Scale of Depression (HRSD) in demented patients ( $N=169$ )

	Mean	$R_s$
HRSD, total score	9.14	0.03
<i>Individual HRSD items</i>		
1 Depressive mood	1.17	0.14
2 Suicidal ideation	0.05	0.04
3 Feeling of guilt	0.26	0.12
4 Insomnia, early	0.09	0.07
5 Insomnia, middle	0.13	$-0.05$
6 Insomnia, late	0.16	0.01
7 Work and activities	1.99	$-0.19$
8 Retardation	1.03	$-0.09$
9 Agitation	0.71	$-0.04$
10 Anxiety, psychic	1.08	0.27*
11 Anxiety, somatic	0.57	0.11
12 Gastrointestinal complaints	0.20	0.02
13 Somatic complaints, general	0.65	0.06
14 Genital symptoms	0.10	0.10
15 Hypochondriasis	0.05	0.01
16 Loss of weight	0.26	$-0.04$
17 Psychological insight	0.53	$-0.05$

Note: Spearman-rank order correlation, \* $p<0.0001$ .

between the total HRSD score and the awareness score ( $R_s$ :  $-0.03$ , NS). As shown in this table, only the score on the item 'psychic anxiety' indicated a weak but significant correlation with the awareness scores, ie patients showing a greater degree of insight had higher scores on this subitem ( $R_s$ :  $0.28$ ,  $p<0.0001$ ).

## DISCUSSION

This study showed that impaired awareness was very common in this sample of demented patients.

In only 7% of the patients were there no obvious discrepancies between the history provided by the patient and that of the caregiver. However, it was also noted that about half of the patients spontaneously reported problems with their memory at the opening question, indicating at least some partial knowledge of their impairments. Thus, it seems oversimplified to state that 'it is not possible for patients with memory disorders to remember that one has forgotten' (Fisher, 1989).

A statistically significant correlation was found between the awareness scores and severity of the dementia syndrome as measured by the GDS score, a finding which is consistent with other reports (Reisberg *et al.*, 1985; Feher *et al.*, 1991). No significant relationship could be demonstrated between the level of awareness and the presence of major depression or the total score on the HRSD. The relationship between awareness and depression in dementia has only been examined previously in one study (Feher *et al.*, 1991), in which also no significant correlation could be found between denial scores and Hamilton depression scores. An additional finding in our study was that the depression scores did not correlate with the severity of the dementia. Therefore, this study cannot provide any support for the view that depression lessens as awareness deteriorates with increasing severity of dementia. A relatively intact awareness was not clearly associated with the development of depressive symptoms in dementia and anosognosia did not protect against depression. A modest but significant correlation could be found between awareness scores and the HRSD subscores on the item 'psychic anxiety' even after a Bonferroni type of adjustment. Although this finding should be considered with caution until further research has been done, it may suggest that feelings of anxiety may be secondary to insight into cognitive decline. This supports the notion that symptoms reflecting an internal psychic state are related to psychological mechanisms (Lazarus *et al.*, 1987). In contrast, major depression in dementia, apparently unrelated to the degree of insight, may be predominantly based on neuropathological or neurochemical abnormalities. The possible implications for the treatment of these complaints, namely a more psychological approach to symptoms of anxiety and an emphasis on biological interventions for the treatment of major depression, should be looked at in further studies.

It could be argued that the absence of a relationship between awareness and depression is due to

the fact that impaired awareness pertains to both cognition and depression. In this view, a low score on HRSD items might simply reflect anosognosia for depressive feelings, rather than the absence of these symptoms. However, this does not seem very likely, since one would expect that severity of dementia would have then correlated inversely with the depression scores, which is not the case. Additionally, the applicability of the HRSD as an objective clinical rating scale, in contrast to self-report measures, has been demonstrated even in advanced dementia (Gottlieb *et al.*, 1988; Ott and Fogel, 1992).

Some limitations in this study have to be considered. It is likely that patients who experience cognitive decline will consent more readily to further evaluation in the Memory Clinic than those without any complaints, and thus some degree of selection bias may have occurred. Furthermore, a four-point rating scale may be too global for the assessment of such a complex phenomenon as awareness of deficits. Systematic investigation of anosognosia has begun only recently, and to date, there is no assessment tool available that provides reliable and valid information with certainty. Finally, the assessment of awareness in this study was based on discrepancies between the patients' and the caregivers' reports and thus depends largely on the reliability of the caregiver. However, caregivers of patients with AD were recently found to be reliable informants of their relatives' memory deficits (Koss *et al.*, 1993), thus this does not seem an important source of error.

## CONCLUSIONS

Our findings suggest that a relatively intact level of awareness in demented patients is not accompanied by an increase in the prevalence of depression. However, it may lead to some specific depressive symptoms, notably psychic anxiety. More research is needed to confirm the results of this study.

## APPENDIX

### *Guidelines for the rating of awareness of cognitive deficits*

#### General instructions

After the clinician has introduced himself, he con-

centrates on the patient, and the caregiver is requested to refrain from any comment.

The following questions are asked:

*Please tell me about the problems you are here for. Why did Dr . . . send you to this clinic?*

When the patient has other complaints not directly related to dementia:

*Do you have any other complaints?*

When the patient has no spontaneous complaints about his cognitive functions:

*How is your memory functioning? Do you think you have a poor memory?*

When the patient denies deficits of memory or other cognitive functions:

*So, there are no memory problems at all? Is everything going all right for you?*

After these opening questions, the complaints are discussed more extensively in an open interview, in which the clinician tries to get an impression of the degree and the nature of the cognitive symptoms and the patient is asked to provide examples.

Then, the clinician puts the same questions to the caregiver adapted to find out about the patient's functions (eg, 'Why did Dr . . . refer your father/mother/ . . . to this clinic?').

#### Scoring

Scoring of awareness is made directly after the interview. Allowance should be made in scoring for cognitive impairments such as paraphasias or concretisms (eg, 'There is a hole in my brain').

- 4 Adequate: Patient has adequate knowledge of his cognitive deficits. Spontaneous complaints about memory or other cognitive dysfunctions. Gives examples. History of the patient is congruent with the history of the informant.
- 3 Mildly disturbed: Patient has some knowledge of his cognitive deficits, but with some gaps. Spontaneous complaints about memory. History of the patient shows some discrepancies with the history of the informant.
- 2 Moderately disturbed: Patient has only vague and passive knowledge of cognitive deficits. No spontaneous complaints, admits to memory deficits only when questioned about them. Obvious discrepancies with the history of the informant.
- 1 Severely disturbed: Denies any deficits. No com-

plaints about memory whatsoever, even after explicit questioning.

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